iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** VI **Month of publication:** June 2021

DOI: https://doi.org/10.22214/ijraset.2021.34959

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue VI Jun 2021- Available at www.ijraset.com

A Result Analysis of Mask Detection based Notification System

Gaurav Kumar D. K. Singh[1], Prof. Pramod Patil[2], Pooja Mahendra Sali[3], Rameshwari Devidas More[4], Mayuri Raju Pawar[5]
[1, 3, 4, 5]*Students, Sandip Institute of Technology & Research Center, Nashik, India*
[2]*Professor, Sandip Institute of Technology & Research Center, Nashik, India*

Abstract: ***Face mask detection system will be the best option for preventing covid-19 spread at public places. Those models are mainly required for ensuring safety and hygiene in a public premises .The research paper consist of full face scan using a pre-trained model such that all the facial characters can be imprinted on the pixel basis by the pre-trained model that takes input from the camera associated with the program. The whole of the program is based on convolutional neural networks which extract features and associate them in the form of neurons.***

Keywords: Mask detection, Convolutional neural networks, Neurons, Video proctoring, Web camera, Alert notification system .

I. INTRODUCTION

As everyone has noticed the tough times through which Covid-19 has led us to. From losses in businesses to shutdown of every business in a short-span due to momentarily lockdown by government to shutdown everything which comes under non-essential category. We will be contributing to an idea which will lead people to adhere to strictly follow Covid-19 safety guidelines, one of which is wearing of masks at public places.

A. Existing System

Existing systems only help in surveillance of people using existing camera modules installed to a central module. The camera system can be used to deploy many other features like object tracking, thermal vision etc.

B. Problem Definition

The statement is to implement mask detection feature to existing systems in such a way that if a person is detected without mask then system will generate a email-notification on authorities.

C. Purpose

The motive of the project is to deploy a full-fledged working model on the existing camera modules.

D. Goals and Objectives

The Goals and Objectives of the given system are as follows:

1) To eliminate the need of police persons at public places for the regulation of Covid-19 protocols.
2) To remove manual intervention for monitoring public places.
3) To provide locations of intruder.

E. Features

1) Face-mask Detection.
2) Deployment on multiple cameras at a time.
3) Alert in real time to respective authorities.
4) Remove the need of external graphics card to detect faces in real-time.

F. Proposed Architecture

Fig – Proposed Architecture

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue VI Jun 2021- Available at www.ijraset.com

II. METHODOLOGY

In this approach, the software which we generated will be clubbed with the existing system in such a way that, the system will be analyzing face masks along with the regular monitoring purpose. The system works on the pre-trained model which once trained can be used at multiple places. The model while training was fetched with images labelled as "Mask" and "No Mask" by us. The model uses concept of taking input via camera and then converting it into BGR format, then again converting it into fixed size numpy array.

We used Tensorflow and OpenCV to train the model using Google colab. The model while training extracts pixel specific features from datasets, which in turn helps it to perform sementation in labels, while working on real-time face detection on camera modules connected to a central identity. We just needed to perform addition of each camera once on the central system using cv2.capture() function.

The overall system finds the difference of pixels in real-time by capturing and analyzing frames, then classifies the person in wearing or not wearing mask, and if mask is not detected then it will generate a custom notification along with location of the camera with the help of SMTP libraries. Thus, respective authorities could be alerted to take action against the intruder.

A. Software Requirements

1) Programming language used – Python
2) Libraries – Tkinter, CV2, Keras, SMTP
3) Frameworks - Tensorflow

B. Area of Project

Artificial Intelligence, Video- Proctoring, Deep-learning, CNN

C. Advantages

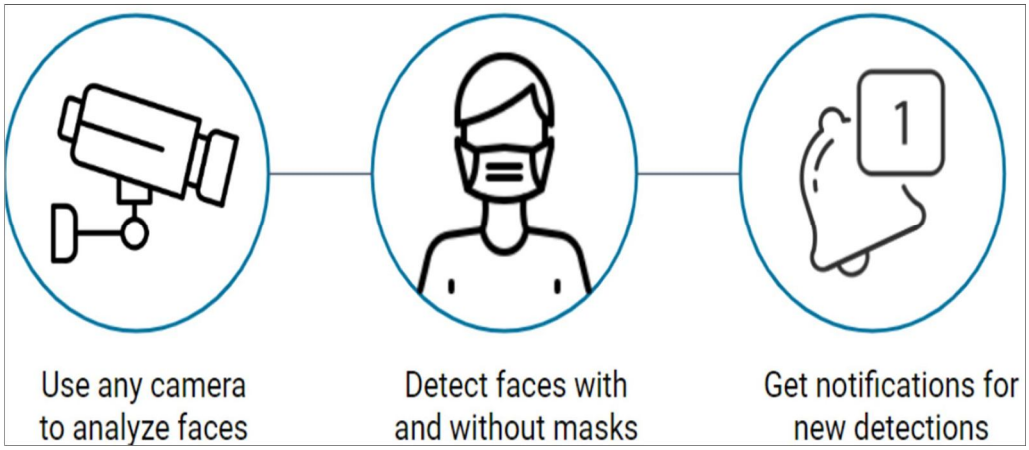
1) Application could be easily deployed on any surveillance camera.
2) Reduce number of mask rule intruders.
3) Tracking via address of premises where intruder was detected.
4) Instant generation of Alert for Respective Authorities via screen pop-up.

D. Limitations

1) For taking action authorities have to manually send their person to fine the intruder.
2) The system currently needs at-least integrated graphics support.
3) System security depends on surveillance system.

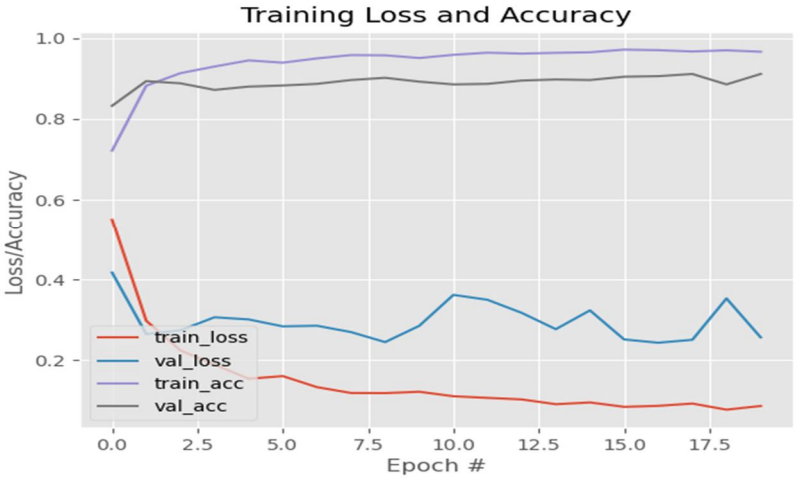
III. RESULTS

It gives perfect detection once deployed after training. We implemented this system on multiple cameras at the same time, and it notifies once intruder gets captured in camera, then the system notifies with an email.



The following figure shows the system implementation as per the requirement of his project.

And the following diagram shows the accuracy we achieved while training the model.

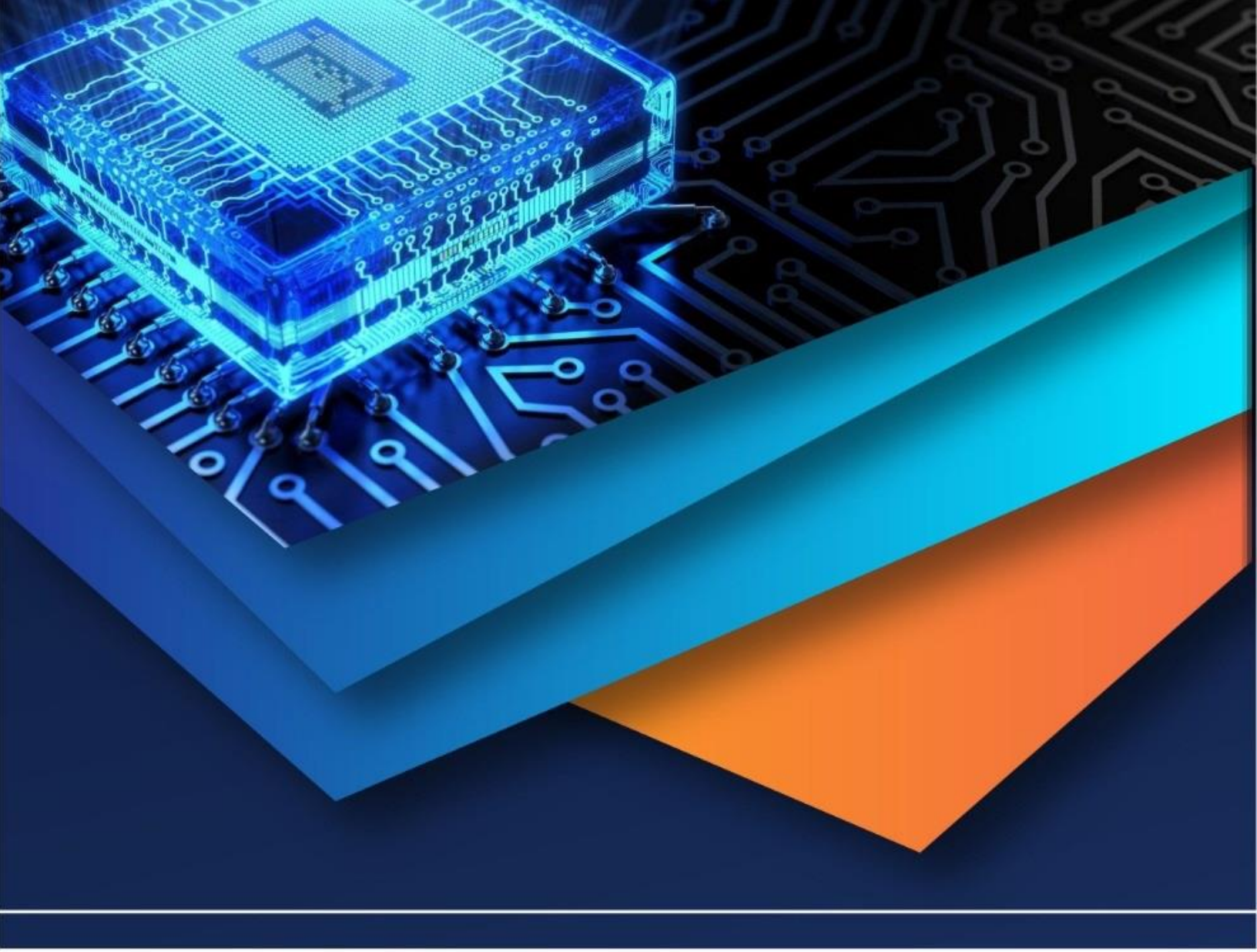


IV. CONCLUSION

The proposed system detects mask whosoever comes in front of cameras, installed in public premises. The existing camera modules in colab with the pre-trained module of us to detect an intruder not following mask wearing protocols. The notification generated by system will be in the form of email and will be an instantaneous process, so that action could be taken against the intruder. The system works in a seemless way with the existing system.

REFERENCE

[1] Advances in Face Detection and Facial Image Analysis, Cham: Springer International Publishing, Year: 2016 | Conference Paper | Publisher: IEEE
[2] "Keras documentation: About Keras", 2020, [online] Available: Keras.io.| Conference Paper | Publisher: IEEE
[3] Research on Image Matching Detection Based on Machine Vision Yihong Wang 2019 IEEE 19th International Conference on Communication Technology (ICCT) Year: 2019 | Conference Paper | Publisher: IEEE
[4] L. Wang and A. A. Siddique, "Facial recognition system using LBPH face recognizer for anti-theft and surveillance application based on drone technology", Year: 2020 | Conference Paper | Publisher: IEEE
[5] P. Pattanasethanon and C. Savithi, "Human Face Detection and Recognition using Web-Cam", *Journal of Computer Science*, vol. 8, no. 9, Year: 2020 | Conference Paper | Publisher: IEEE
[6] T. Schenkel, O. Ringhage and N. Branding, "A COMPARATIVE STUDY OF FACIAL RECOGNITION TECHNIQUES With focus on low computational power", Year: 2019| Conference Paper | Publisher: IEEE
[7] "OpenCV", 2020, [online] Available: Opencv.org| Conference Paper | Publisher: IEEE
[8] "Face Mask Detection", 2020, [online] Available: Kaggle.com| Conference Paper | Publisher: IEEE
[9] "Guide to the Sequential model - Keras Documentation", 2020, [online] | Conference Paper | Publisher: IEEE



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY